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Unusual patricide: case report

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understanding of the possible mechanisms and nature of deaths occurring under the condition of harness suspension. This experience may be helpful in future investigations of similar cases.

Rock climbing is a popular outdoor activity that may involve suspending oneself within a harness while climbing or descending. Harnesses as a component of a personal fall protection system are used in other recreational and industrial activities. The hazards of falls are obvious, but less well known are the possible hazards of prolonged harness suspension. The harness hang syndrome, also known as suspension stress or suspension trauma, is the result of the physiological response to a motionless body being suspended in a vertical position for a period of time. It is believed that this can lead to cardiovascular alterations, loss of consciousness and even death. Although the medical and forensic literature has little on this subject, other types of suspension and asphyxial deaths are well-known. The most common type of suspension death, of course, is hanging. But other types of asphyxial deaths may involve suspended or trapped body positions such as traumatic or positional asphyxia. The death of a young male who was rappelling down a rock face in close proximity to a waterfall is presented.

This 24-year-old man was found suspended in his rock-climbing harness along the rock wall of Mildred Falls in the Cleveland National Forest on evening of February 11, 2011. A hiker had reported hearing cries for help, but had to hike a long distance to get cellphone reception. The time of the 911 call was 5:08 p.m. By the time rescuers responded to the scene the decedent was motionless and unresponsive. His body was described as arched backward with his chest and face towards the falls. His recovery from the scene was delayed due to darkness and environmental conditions. The next day, he was pulled up from the falls, confirmed dead, and transported to the Medical Examiner's Office. He was known to be an avid rock climber and his car was found parked at the trailhead to the falls. The decedent had left his house in the early afternoon and had told his roommate that he was going to make the descent at the falls. According to family, his medical history was unremarkable.

At autopsy he had multiple scrapes and contusions of the skin, but no evidence of internal trauma. At least some of the abrasions appeared to have occurred during the recovery. Other findings were suggestive of asphyxia including numerous periorbital and conjunctival petechiae. No internal neck, head, chest, or abdominal trauma was found, and no pre-existing natural disease was noted. No alcohol, basic medications, or common drugs of abuse were detected on toxicologic testing. There was no evidence of neck compression and no specific findings suggestive of drowning. It is believed the mechanism of death was a result of mechanical asphyxia and probable hypothermia.

If conscious, someone in the decedent's position would be expected to exert oneself in an effort to escape or regain control until the point of exhaustion, unconscious, or death. The exertion itself along with panic or other emotional factors may also play a role. In this case, the rock wall was wet and covered with vegetation so there was little chance of climbing back up or even getting a foothold in order to transfer body weight from the harness. Of course, one would be unable to escape being suspended if an injury or other preceding event had already caused unconsciousness. Other factors considered in this death case were the possible roles of drowning and hypothermia. As seen and inferred by the video the body was not constantly or consistently in the water and the autopsy did not show evidence of drowning. Therefore this mechanism is unlikely. However, hypothermia may well have been a factor.

The literature theorizes that suspension stress or harness hang syndrome is due to orthostatic hypotension along with other possible cardiovascular mechanisms; however, this has not been verified experimentally. It is believed the mechanism is probably respiratory, not cardiovascular, and that these types of deaths should be considered a form of mechanical asphyxial. This may be the result of direct compression on the chest or abdomen impeding the ability to breathe (traumatic asphyxia) or a body position that interferes with the ability to maintain an open airway (positional asphyxia). The body compression may be from the harness or its attached ropes and straps and may be influenced by the body's position. The position may vary depending upon the state of consciousness, the type of harness and

attachments and how they are positioned. It is uncertain how long one must be suspended in order to have adverse effects, and obviously the time frame could vary depending on the circumstances.

Until further research and analysis of similar deaths are undertaken, the nature, physiological effects and dangers of harness suspension are still largely unknown. However, one should be aware of the potential risks of prolonged harness suspension while unconscious or otherwise.

Harness Hang, Suspension, Rappelling

G71 Unusual Patricide: Case Report

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After attending this presentation, attendees will have a better understanding of the classification of homicide called case of patricide.

This presentation will impact the forensic science community by stimulating discussion on whether or not mental illness should be considered a "trigger point" for offenders.

Patricide is defined as a homicide in which victims are parents and the killers are their children. "Patricide" is the definition given to the murder of father, while "matricide" refers to the murder of the mother. International literature reports that this crime is often associated with psychiatric morbidity and is usually committed by males. Patricide committed by sons is the most frequent form. In Italy, patricide is quite rare and it represents less than 3% of all murders (59% matricides and 41% patricides). The typical profile of the offender is a young adult male who is single and unemployed. The offender typically lives with victim (quite often an old and disabled person), and is suffering from mental illness with co-morbidity of alcohol or drug consumption and/or abuse. Usually he is not able to separate himself from his parents or to assume responsibilities. The homicide usually takes place at home at the end of an argument, and common tools found in the house are often used as weapons. A 73-year-old man was found dead at home, on the kitchen floor, after his son confessed the murder. He killed his father early in the morning, after yet another argument with him. He then called the police, and sat on the floor awaiting the officers, fully aware of his guilt. A pair of scissors and a cross-head screwdriver, both with traces of blood, and a wooden board were located close to the body. At crime scene, the victim was supine and showed multiple injury pattern. Clothes were raised upon the thorax and multiple thoracic-abdominal lesions were found together with bruises and abrasions of the head. The sternal area showed two larger stab wounds, while eleven penetrating cross-shaped puncture wounds affected precordial, epigastric, and mesogastric regions. Four other shallow, cross-shaped punctures of the skin surrounded these lesions. At autopsy, gross examination of organs showed visceral lesions with cardiac, hepatic, and intestinal involvement, widespread hemorrhagic infiltrates of cranial soft tissues, skull fractures (vault), and diffuse subarachnoid hemorrhages (SAH). Multiple and serial rib fractures were also found. The cause of death was related to traumatic shock due to blunt head trauma and multiple stab wounds. All autopsy data allowed drawing the following crime reconstruction: victim's head was initially hit with the wooden board and the man fell down, striking his head on the floor. Then the offender uncovered the anterior thorax and abdominal anatomical regions of his father and stabbed him with the pair of scissors and the screwdriver. Finally, he raised the victim's body, crushing the chest with his weight. The offender's criminal profile revealed a 45-year-old man, with elementary school education. At a young age, he became a construction worker at building sites in Northern Italy. The father, a construction worker too, was described as extremely strict with the son. The mother, a housewife, was characterized as a warm-hearted woman. The offender was very shy, the second of six children, and the only son. He did not have any recent romantic interests and he remembered only

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one relationship with a woman in the past. No psychiatric disorders were in his medical records. He had a history of drug-addiction (intravenous heroin) and during the last years, he admitted to occasional use of cannabinoids and cocaine sniffing. However, the drug screen was negative when he was imprisoned. His mother had died a few months before, and due to an accident at work, the offender had lost his job. He was at home with his father every day. The mother's death broke the intra-family balance, and co-habitation caused relationships to deteriorate. The domestic context and the special violence of the crime induced the Court to impose a forensic psychiatric assessment of the offender that excluded factors of mental illness or psychiatric disorders at the time he killed the father. On these bases, the presented case is an unusual patricide that departs from those typically found in the literature.

Forensic Pathology, Patricide, Forensic Psychiatry

G72 Accidental Decapitation Due to Tamping Machine: A Case Report

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The goal of this presentation is to report an uncommon case of accidental decapitation in a worker of a railway line.

This presentation will impact the forensic science community by enhancing worker knowledge of the risks associated to railway activities by showing an unusual incident of work related heheading by heavy machinery.

Decapitation is represented by separating the head from the body with cuts in the soft tissues of the neck and resection of the spine at the level of the last cervical vertebrae. Generally speaking it is referred to the act of intentional or accidental decapitation and it can be the result of an explosion, car or industrial accident, or other violent injury. Suicide by decapitation is unusual. Death by beheading is quickly fatal and it consists in the resection of the neck structures (vessels, nerves, cervical spine).

Presented here is a case of a 45-year-old man who worked on the railway line with other four colleagues, in close proximity to a ballast machine. A ballast tamper or tamping machine is a machine used to pack (or tamp) the track ballast under railway tracks to make the tracks more durable. For each rail there is a tamping unit attached to the main frame by means of vertical guide columns and a lifting/lowering hydraulic cylinder. The operations are controlled from the control cabin by an operator using three pedals, while the lining bogie holds the track in its lifted and slewed position. The Ballast Cleaning Machine (BCM) carries-out deep screening of ballast, which is an important maintenance activity to improve drainage and the resilience of the track. The cutter blades of the BCM dig out ballast from under and around the sleepers, and a conveyor belt transfers it to the on-board cleaning equipment where the ballast is passed over screens which remove fine debris. The clean screened ballast is returned to the track and the fine screened residue is ejected to one side, usually into a hopper wagon on an adjacent track. The machine goes into reverse and the blades rotate counter-clockwise.

The victim was located to the left of BCM, near the cutter blades, checking the correct progress of operations, while another worker was driving the machine the other two were together on the other side. All workers were dressed with safety equipment such as helmet, headset, and reflective vest. The victim was probably bent near the chain when he was slipped due to the instability of the ground, being hit on the helmet or on the jacket by the teeth the chain. The speed of the machine did not allow the victim to move away from the chain and he was transported to the right arm of the BCM, inside of which entered his head, but whose size (45 centimeters height and 40 centimeters wide) did not allow the passage of whole body.

At the autopsy time we found the head and the right forearm detached from the rest of the body. The longitudinal diameter of the head was 28.5 centimeters and the diameter of the laceration at the base of the neck was 15x10 cm. In the right parietal region there was a large lacerated and bruised wound the total length of 15cm and in the left fronto-temporal region there was another lacerated and contused wound with margins diastase that affects the entire skin thickness; also he had fracture of the left lateral eye socket. The laceration line passed through the high left lateral to the low right lateral and posterior part of the upper cervical region. Head and neck were covered with powdered material. The airway was severed at the trachea level. The laceration present in the cervical region had a longitudinal diameter of 21.5 centimeters and transverse diameter of 16 centimeters and through it passed heart and part of lungs, traction by trachea and neck vessels. Excoriated streaks and de-epithelialisation area were observed in whole body even if mainly in the dorsal region; these injuries were due to the action of sliding on the stones present in the binary. The helmet and the headset were broken.

No other similar cases are reported in literature.

Decapitation, Railway, Ballast Cleaning Machine

G73 Seasonal and Environment Effects on the PMI Estimation Using the Entomological Approach

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After attending this presentation, attendees will receive novel information about the advantages of practical application of forensic entomology in different environmental conditions (indoors, outdoors, water) and in different seasons.

This presentation will impact the forensic science community by offering new data about the composition of the carrion breeding fauna particularly during the winter season and the effect of global warming on the entomofauna. This presentation will offer as well a statistical approach for the estimation of the season in which the death occurred. This topic is of particular importance in "old cases."

Forensic entomology is a branch of forensic science in which insects are used as evidence in legal investigations relating to humans or wildlife. The examination, identification, and analysis of insects associated with human remains, combined with the knowledge of insect biology, can provide a further level of detail in addition to medical and anthropological data in the reconstruction of events occurring close to the time of death. In particular, necrophagous insects are useful in studying Postmortem Interval (PMI), postmortem transfer, and presence of drugs or poisons.

Seasons, environment, concealment, and accessibility play an important role in the selection of the carrion breeding insects. It is worth mentioning that during the last 25 years global warming and globalization have modified the species distribution with important effects on the application of the entomological method for the PMI estimation (Turchetto and Vanin, 2010, in Amendt et al., *Current Concepts in Forensic Entomology*, Springer).

Twenty cases have been considered from an entomological point of view. The cases occurred, during the last two years, in Central Italy which is an important area for the understanding of the global warming effect on the entomofauna.

The bodies were discovered between February and November and the estimated minimum PMI ranged from few days to several weeks. Socially isolated people, drug or alcohol addicts, or old people living alone were involved in the majority of the cases considered. The causes of death included natural, homicide, suicide, smothering, and drug overdose. In four